

JPRS-EST-93-033  
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# ***JPRS Report***

# **Science & Technology**

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***Europe/International  
Economic Competitiveness***

# Science & Technology

## Europe/International

### Economic Competitiveness

JPRS-EST-93-033

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### EC To Standardize Intellectual Property Rights

93WS0661A Paris AFP SCIENCES in French 29 Jul 93  
pp 2, 3

[Article: "EEC Proposals for Protection of Intellectual Property"]

[Text] Brussels—The European Commission on 28 July adopted a series of proposals intended to strengthen juridical protection of industrial designs and models. The authors of designs or models "of novel and distinctive character" would have exclusive rights over their utilization once registered with a national office associated with the EEC Trademarks Office, whose headquarters will be established at a location yet to be decided.

According to the European Commission, protection could be renewed at 5-year intervals up to a maximum of 25 years.

Currently, there is no time limit on protection in Portugal, but the limit is 50 years in France, 25 years in the United Kingdom, 20 years in Germany, 15 years in Netherlands, Belgium, Luxembourg, Italy, and Denmark, and 10 years in Spain. In the specific cases of textiles and fashion, designs and models would automatically enjoy protection against any reproduction or use, even if unregistered, for a three-year period beginning with their first public presentation.

The visible parts of automobiles, which represent 3.5 percent of all the parts that go into vehicles, would also get automatic three-year protection.

### France Forms Telecommunications Policy Group

93WS0661B Paris AFP SCIENCES in French 29 Jul 93  
p 10

[Article: "Creation of Study Group on Telecommunications Satellites"]

[Text] Paris—Master armaments engineer Yves Sillard, former director general of CNES [National Center for Space Studies] and erstwhile delegate general for armaments, will head a study group on telecommunications satellites, according to a 22 July announcement from the Ministry of Industry, Posts and Telecommunications, and External Trade.

The study group, on which government agencies and the industrial enterprises concerned will both be represented, is supposed to recommend areas in telecommunications where effort needs to be concentrated if French industry is to maintain competitiveness and technological expertise. Mr. Sillard will submit a report by the end of October presenting the group's conclusions.

At the 2 July Ministerial Council, Industry Minister Gerard Longuet spelled out the objectives of France's space policy, noting that France needs to "show its commitment to participate in an intelligent space policy and convince its European partners to forge ahead." He also emphasized the need to "assure continued work on future space technologies, which will require a sustained

commitment to research and development in every area critical to our independent space capability," according to the council's official communique.

### Germany: Federal Support for Nuclear Energy Research Detailed

93WS0687A Frankfurt/Main FRANKFURTER  
ZEITUNG/BLICK DURCH DIE WIRTSCHAFT  
in German 05 Aug 93 p 8

["Work Needed to be Done on Earlier Nuclear Facilities Cause Support Level to Rise"]

[Text] TN. FRANKFURT. The German Federal Government is supporting nuclear power to the tune of 862 million German marks [DM] this year. Added to that is the proportional amount of about DM100 million provided by the individual States. With its DM561 million, nuclear power research is the largest spending priority. The Government justifies its outlays in this field by pointing to the need to conduct research in order to ensure future reactor safety, to provide for the removal of radioactive waste, and to further improve reactor designs.

Support for governmental reactor developments like fast breeding and high temperatures reactors has been ended for this year. Nonetheless, DM267 million have to be allocated in 1993 for the demolition of older facilities. This is not done under the aegis of supporting research, but under the rubric "rebuilding nuclear-engineering facilities." The Federal Ministry of Research is obligated under earlier risk-sharing agreements to make increasing outlays in the years ahead. As the BMFT (Federal Ministry for Research and Technology) publication "Power Research," Bonn, 1993, indicates, the costs of attending to these earlier nuclear facilities, which must be financed from the BMFT's budget are estimated to range from DM6 to DM8 billion.

Elsewhere, within the Federal Government the Federal Ministry for the Environment is providing DM34 million in the field of radiation protection. Increases have appeared here too, as the result of expanding international cooperative ventures. Since 1956, the total amount allocated for nuclear power research has now reached DM35 billion. Because of the need to work on earlier nuclear facilities, the amount the Federal Ministry for Research will have to appropriate will increase further, rather than decrease.

### French Minister on Research-University Ties

93WS0691A Paris AFP SCIENCES in French 2 Sep 93  
pp 1, 2

[Text] Chambéry—On 30 August in Chambéry, higher education and research minister Francois Fillon called for universities and big research organizations in France to step up efforts to work together to improve their research. "We must combat the separation—unknown anywhere else in the world—between universities and research organizations in our country. Synergy between the two must be a real imperative," stressed the minister

in a speech given at the opening ceremony of the International Conference on Artificial Intelligence (IJCAI).

"I expect to see the distribution of investment change so that research is still funded and assessed nationally, but carried out decentrally," Fillon went on to say. "Big research organizations must set directions and allocate funds—essentially through bid invitations. But their direct management of laboratories is unhealthy: Laboratories should be accountable to the institutions that house them, particularly universities. Better coordination of research organizations prevents national investment from being scattered."

Moreover, Fillon announced "a series of national-level meetings, beginning this fall, to take stock of the research being done in our country." In the minister's view, "It is a matter of national interest for a country like France to review its major scientific policy choices about every 10 years."

Fillon also discusses the question at length in an interview published in the latest issue of the review *LA RECHERCHE*. In contrast to some of his predecessors—notably Hubert Curien, whom Fillon claims took a "technician's" approach to managing science issues between 1988 and 1993—the new research minister is handling the job as a politician, whose task is to "define the broad policy orientations" of his field and "manage those policies."

"The major problem the government must deal with in higher education and research," said the minister, "is exactly that: How to restore ties between two areas which, for historical reasons, have been managed separately—in my opinion to their mutual detriment. Higher education today suffers from inadequate research resources. Universities are also losing out on the wealth of knowledge researchers are capable of transmitting."

"Approaching the problem without a unified administrative system is unthinkable. Obviously it is not enough, either. To go farther, the synergies between universities and research centers must be put to best use in every way, notably by bringing together a certain number of assessment and consulting organizations (such as the National Assessment Committee - CNE). The quality of these organizations is often very good, but they could work together," adds Fillon. The minister notes that as soon as University-State contracts come up for renewal, research contracts will be combined with higher education ones. "We must reform systems, and take whatever works well in each world so that others can benefit," he insists.

On the question of the research budget, Fillon believes we "must have the courage to admit that the last two budgets were full of smoke and mirrors, and that they authorized program monies in excess of available resources. I would like to see the number of scientific research personnel remain stable. For now, the Budget Ministry's cost-cutting proposals support that goal, since

the 1.5-percent reduction in government employees does not affect science policy. That is very important."

"Under current conditions," Fillon is aiming for a budget "status quo" as a percentage of gross domestic product (GDP). "It would be unreasonable to impose anything more on the nation," he continued. "France invests 2.4 percent of its GDP, or about 160 billion French francs [Fr], in research. True, our German and Japanese competitors pour 2.8 percent of their wealth into scientific studies, but everywhere else, public investment hovers around 1.1 percent of GDP. The difference is made up by corporate investment, which is higher in those countries. Industrial research will be one of our priorities."

#### **Germany: KfK, Fraunhofer Society Carry Out Microsystems R&D**

*MI2109132593 Bonn TECHNOLOGIE-NACHRICHTEN  
MANAGEMENT-INFORMATIONEN in German  
30 Jul 93 pp 15-16*

[Text] The Karlsruhe Nuclear Research Center (KfK) and the Fraunhofer Society for Funding Applied Research (FhG) have agreed to collaborate in the field of microsystems engineering. In future, research and development work will be coordinated. In a mutual exchange of experience, application-relevant problems are to be tackled better than before through selective use of resources in terms of staff and equipment.

Microsystems are intelligent combinations of components from the fields of microelectronics, micromechanics, microoptics, and chemical microsensory systems. They collect data, evaluate it, and perform actions. The sensors correspond to the human senses, the signal processing system to the brain, and the actuators to limbs. These complex microsystems are based on components and subsystems, the development and manufacture of which offer opportunities and challenges to German industry, especially small- and medium-sized companies, in the competitive battle on the international market.

The Nuclear Research Center has many years' experience in the field of microstructure production using lithography with synchrotron radiation, electroplating, and plastic molding. This technology, also known as the LIGA process, was discovered at the KfK and is being continually improved. This technology is used to produce three-dimensional microstructures from metals, plastics, and ceramics. Minimal structures are in the 0.001mm range, and heights may be up to 1mm. The KfK also has experience in materials sciences, chemical microsensory systems, and information processing.

The Fraunhofer Society, with institutes in Berlin, Munich, Duisburg, and Freiburg, has considerable experience in the field of microstructure production in silicon, integrated circuit technology, and integration of these components into microsystems.

The development of microsystems engineering is an ambitious task, the potential of which can be fully developed only through broad interdisciplinary collaboration between different disciplines of natural and engineering sciences. A large-scale research establishment like the KfK is especially suitable for such tasks, and cooperation with the FhG will further strengthen its R&D work in the face of international competition.

In the future, microsystems engineering will be integrated in significant areas of our daily life. There is virtually no alternative to microsystems engineering in general measurement and control technology, household engineering, transportation, environmental technology, and especially in medical engineering, in the area of minimally invasive therapy (or surgery). Here, everything has to be small to minimize adverse reactions when the necessary therapeutic interventions in the blood vessels or the brain take place. The most important instrument here is the intelligent microendoscope with remote-controlled micromanipulators, high-quality three-dimensional image transmission, and integrated diagnostic system. The first components for this ambitious application, e.g., turbines with the diameter of a human hair, electromotors, pumps, and valves, are being developed at the KfK.

#### **Germany: Research at Institute for Applied Chemistry Reorganized**

MI3009114193 Munich SUEDEDEUTSCHE ZEITUNG in German 26 Aug 93 p 18

[Article by Manfred Ronzheimer: "Innovation from Adlershof: Berlin Applied Chemistry Institute Starts Work After Two Appraisals"]

[Text] Sometimes the research chemists on East Berlin's Adlershof science campus fare little better than the elements and compounds they deal with every day: they are themselves separated and recombined, distilled and concentrated, some are boiled up and others poured down the drain. Of the once 1,700 or so researchers and technicians employed at five chemistry institutes on what was the GDR [German Democratic Republic] Academy of Sciences' largest site, there are now 300 left, housed in four thematically structured "Chemical Centers." They have now been "appraised" twice. In the past few months their prospects darkened visibly when the Federal Research Ministry and the land of Berlin were unable to agree how the Science Council's recommended formation of an "Institute of Applied Chemistry" in Adlershof should be organized. Berlin wanted a "blue list" institute, making nine in the eastern part of the city; Bonn was willing to provide funds, but was not prepared to take additional posts into its budget, so it decided that the institute should be constituted as a private law association.

In mid-August the Bonn variant was agreed. So the new institute, with an annual budget of 20 to 30 million German marks shared between the federal government and Berlin, will have only 150 establishments. One

hundred and fifty staff will have to compete for the roughly 75 temporary posts funded from outside.

The remaining research chemists are expected to be able to devote themselves to the work the Science Council and other chemistry experts consider to be the Adlershof Institute's great opportunity at the beginning of 1994, that is innovative chemical research in interdisciplinary fields, with the emphasis on applications. The main fields will be catalysts and catalysis, sorption processes, and special polymers.

In many cases the preparatory work already done in GDR days is a good basis for breaking into new, innovative fields. "For example, we can contribute a great deal of experience in the field of optical polymers because we did research for Carl Zeiss Jena for 10 years," reports Hans Joachim Lorkowski, head of the Macromolecular Chemistry Center (ZMC) in Adlershof. In those days the chemists also worked on the so-called resist materials for producing the microstructures on computer chips. These two fields will now be combined. "We are now trying to make very finely structured conductor tracks for optical information processing," Lorkowski says. Microglass fibers on chips mark the dawning of a new computer age, and Adlershof's chemists are in on it with their optical polymers.

What the inner structure of materials is for the ZMC researchers for their colleagues at the Heterogeneous Catalysis Center (ZHC) are the chemical interactions that take place when catalysts are used. Catalytic processes can influence the reaction rate and reaction conditions of chemical conversions. Center head Bernhard Luecke stresses that the processes of materials transformation require increasingly precise targeting. This is firstly because of changed raw material sources, but increasingly also because of "the ecological demands on chemistry." The problem is two-edged because the catalysts used to reduce environmental pollution are often toxic materials themselves. But it has become impossible to imagine modern production without them: Over 80 percent of all industrially used chemical reactions now employ several catalysts.

The ZHK researchers are experimenting with three groups of materials: zeolites and "molecular sieve crystals" of extremely porous materials whose crystalline structure is ordered very regularly, like alumophosphate; metal catalysts like nickel, cobalt, molybdenum or precious metals; and oxidic systems of various composition.

#### **Environmental Advantages**

A process with particular environmental advantages is "absorption catalysis" in which hot or cold gases are first passed through a filter system that "absorbs" or removes the harmful substances from the stream. "In the second stage," Bernhard Luecke explains, "these absorption materials at the same time act as a catalyst, converting the hazardous substances into harmless or dumpable composites."



Thus, they are among other things currently working on a desulfurization process for hot gases from lignite power stations. The special feature is the high temperatures of 500 degrees Celsius or more that have to be maintained for fluidized bed gasification in combined cycle power stations and for which conventional desulfurization methods are unsuitable. The Adlershof chemists are trying to do it with special ceramics that in Luecke's words "are able to fix the sulfur by surface processes and can themselves be regenerated." These ceramics are made on the basis of polyurethane sponges.

Chemistry has long since changed from being a science of chance discoveries to a targeted search for new composites. The materials of the future will be "tailor-made" for their respective applications, and nowhere is this "design" orientation pursued with such effort as in the development of new medicines. Here, too, Adlershof's chemists are in on the act: The Selective Organic Synthesis Center (ZSOS) is working on ways of producing desired substances without unwanted byproducts.

The ZSOS's work will also help to make chemistry ecologically sounder. The most recent results in the sulphobetaine class of compounds are examples of this. "These are composites that separate oil-water emulsions very well when only small amounts are added," Egon Gruendermann of the ZSOS explains. As little as 0.1 percent is enough to start the separation effect. He believes they can be used not only in crude oil extraction, but in all industrial processes where oil-water mixtures occur.

#### Germany: BMFT Funds Research and Development

##### Molecular Biocomputing

MI0410143193 Bonn TECHNOLOGIE-NACHRICHTEN  
MANAGEMENT-INFORMATIONEN in German  
30 Aug 93 pp 8-9

[Text] Over the period 1993 through 1997, the BMFT [Federal Ministry of Research and Technology] is funding eight joint molecular biocomputing projects involving 30 computer science and life science research teams from universities, major research institutes, and industry.

The purpose of molecular biocomputing is to develop highly specialized software that will enable powerful computers to be used in molecular biology and biotechnology research. Molecular biocomputing is an example of a new, high-potential interdisciplinary research field bordering on the traditional disciplines of chemistry, biology, and computer science.

Molecular biocomputing findings will make for the faster, more reliable, and cheaper development of new drugs, vaccines, and pest control products; help breed plants giving higher-yield crops; and contribute to the development of new biocatalysts. They will also obviate the need for much animal testing.

High hopes are placed in the findings of the BMFT's joint projects: It is expected that they will pave the way for "preliminary scientific research on 21st-century technologies" and the introduction of marketable biotechnological products.

The molecular biocomputing funding scheme was devised as part of the "Strategy for the Future: Computer Science" program and coordinated with the BMFT's "Biotechnology 2000" program. The BMFT will spend about 23 million German marks [DM] on this funding area from 1993 to 1997.

##### BMFT Molecular Biocomputing Projects

One long-term goal that the biocomputing scientists have set themselves is on-screen molecule design. This will enable them to design large biomolecules (biopolymers), such as proteins and nucleic acids, which are among the major components of living matter, on the computer in the same way that chips are currently designed in electronics. This will enable a massive potential in terms of biotechnological products "tailor-made" for special applications to emerge.

What will probably be the greatest innovatory thrust in biotechnology may be expected from the findings of the intensive genome research that is being performed worldwide in the attempt to decode the entire mass of genetic information relating to organisms, including human beings. The volume of the molecular biology data emerging from these studies is proliferating to the extent that it requires new database technologies to handle and access the data intelligently. Progress in this area is expected from the findings of the joint HEDAGE project (University of Stuttgart and the DKFZ [German Cancer Research Center] in Heidelberg; funding DM1.2 million). The project aims to develop a user-friendly genome information system integrating single, geographically distant, databases into an overall system and allowing the systematic analysis and linking of heterogeneous biological data.

The brief of the researchers working on the joint DETHMO [Design of Therapeutic Molecules] project (three institutes of the Free University of Berlin, the Society for the Promotion of Applied Computer Science in east Berlin, and WITA GmbH in Teltow, Brandenburg; funding DM6.6 million) is to develop new pattern recognition and structural optimization methods and use them to design therapeutic peptide and nucleic acid molecules, synthesize them, and demonstrate that they inhibit viral infections.

Forecasting the three-dimensional structure of proteins, which is determined by the type of sequence of their components (amino acids) in the molecule, is central to genome research. As the three-dimensional structure of these molecules establishes their biological functions, structural knowledge is essential to the targeted development of new biocatalysts. The joint PROTAL project (University of Bielefeld, the GMD [Society for Mathematics and Data Processing] in Sankt Augustin, and the

GBF [Society for Biotechnology Research] in Braunschweig; funding DM2.6 million) is working on structural forecasting of this kind. The identical parts of the amino acid sequences of two proteins and the known structure of one of them will be taken as the basis from which the structure of the other protein may be inferred. The project is also expected to provide insights into the evolutionary relationship between molecular structure and biological function.

The teams taking part in the joint NEUROGEN project (the DKFZ in Heidelberg, the University of Stuttgart, and MDC in east Berlin; funding DM1.2 million) are attempting to solve the problem of protein structure forecasting through simulation on parallel computers.

They envisage combining adaptive neural network architectures modeled on naturally occurring brain structures with evolutionary algorithms that simulate the process of biological evolution at high speed.

The joint AeBAV [Similarity Analysis of Biologically Active Compounds] project (Technical University of Munich, University of Stuttgart, BASF, and Merck; funding DM2.5 million) also plans to use neural networks and evolutionary algorithms, although here their purpose is to analyse the similarity of biologically active compounds. The intention is to develop methods making it possible to compare the biological properties of a large number of molecules with a view to facilitating the systematic search for new reference structures in pharmaceutical and agrochemical biocatalyst research.

The joint GENUS project (the GBF in Braunschweig, the University of Bielefeld, MDC in east Berlin, and the GSF [Society for Radiation and Environment Research] in Neuherberg; funding DM2.1 million) is working on the gene regulation system, which controls the cellular processes, such as cell growth, in proteins by virtue of the arrangement and structure of the genes.

The project aims to use information technology processes to identify in recently discovered nucleic acid sequences fragments of these sequences that regulate the biological information flow in cellular processes, and to analyze, compare, and classify them.

In virtually all cases, the functions of the genes and of the products created as a result of their controlling influence derive from intermolecular interaction. If a biocatalyst (= ligand) is to bind to a receptor (e.g., a virus or enzyme), the interacting surface zones of the molecule must be calculated so that the effects can be assessed. The joint RELIWE project (Merck in Darmstadt, the EMBL [European Molecular Biology Laboratory] in Heidelberg, the GMD in both St. Augustin and Darmstadt, and BASF in Ludwigshafen; funding DM4.4 million) is developing new algorithms and data base strategies for this purpose whereby 3-D models of receptor-ligand complexes can be generated by modeling,

molecule docking, and data base searching. The industrial members of the team will test the software, once it has been developed, on examples and practice-relevant research of their own.

The joint BLOWEPRO [Biomolecular Protein Interaction] project (the GBF in Braunschweig and the universities of Munich and Bielefeld; funding DM2.4 million), which is working on the biomolecular interactions between proteins, focuses on the development of information technology methods that can be used to forecast whether and where stable complexes or weaker contacts will form in highly complex proteins of known molecular structure.

Further information may be obtained from the BMFT's Information Technology Project Manager, German Aerospace Research Institute (DLR), Rudower Chaussee 5, D-12484 Berlin.

#### Advanced Optical Systems

MI3009111593 Bonn TECHNOLOGIE-NACHRICHTEN  
MANAGEMENT-INFORMATIONEN in German  
30 Aug 93 pp 12-13

[Text] The results of two studies and recommendations of a group of experts show that the development of an artificial eye with the associated signal processing ("electronic eye") is an advanced technology with considerable innovation potential for products in many fields of application.

Research Minister Dr. Paul Krueger is taking steps to find out which problem-oriented projects relating to the electronic eye can be funded. "Reconstructing the mechanism of the visual processes and reproducing it as far as is both possible and useful is a great challenge for research and development. Ultimately, the task is to convert this information processing capability into a practical industrial system using the resources of microelectronics, and then to use it," declared Research Minister Krueger.

The nature of the problem must be set out in advance by industry with the involvement of all the necessary authorities in research institutes and universities. The complex and interdisciplinary problems to be solved are of a very long-term nature, so it seems that a period of up to nine years is needed to solve them. The BMFT [Federal Ministry of Research and Technology] will provide about 45 million German marks, initially for three years, and is expecting an equivalent commitment from industry.

The following applications for industrial visual systems are considered to have a particularly high innovation potential:

—Inspection and monitoring systems, e.g., for industrial plants, preventive monitoring, environmental protection, recycling, safety systems, visual control during production and assembly, quality assurance, etc.

- Visual control and guidance systems for autonomous vehicles or robots, driver support, detection and evaluation of non-track-related events using a visual system with a broad field of vision.
- Image-controlled diagnosis and surgery with minimal intervention in the patient's body.
- Wide-area and high-resolution sensors for reading colored image information such as drawings, photocopies, documents with signatures, text, etc.

#### Fundamental Considerations and Project Responsibility

The funding program is based on the following considerations. All work within the project to develop an industrial visual system will, on principle, be application-oriented, industry-led and will provide German industry with products in the field of high technology and hence create jobs. The work funded must end with functioning prototypes. Joint projects with participants from industry, universities, and research institutes will devote themselves to the individual prototypes. Industry will be responsible for setting the objectives of a joint project and later for developing them to obtain marketable products.

The development work should be organized in such a way as to result in a succession of prototypes throughout the life of the project, created with whatever technology is available at the time. These prototypes should demonstrate the feasibility of the intended application so as to encourage further development work.

#### Important Areas for the Development of Prototypes

The technologies and methods of signal processing to be developed should be justified by the planned applications and their cost should be in an appropriate relation to the contribution they make to solving the problems.

The technological bases that should be used jointly for as many projects as possible are as follows:

- Technological development of the image sensor e.g., by means of CCD's (charge-coupled device), CMOS technology (complementary metal oxide semiconductors), thin film technology on glass substrates or flexible films, and optical solutions.
- Construction and coupling technology by way of multilayer structures and 3D coupling technology, for example, a cubic integration.
- Design tools.

It should also be possible for the necessary architectures and algorithms for signal processing to be used jointly for as many projects as possible. If possible, the system structures in each case should be chosen so as to permit variable complexity, adaptivity, receptiveness, and the use of various sensors.

Modeling visual biological subsystems on the basis of the available data and hypotheses can support the projects.

The complete text of the recommendations and further details may be obtained from Prof. H.J. Werrmann, project manager for information technology at the German Research Institute for Aerospace (DLR), Rudower Chaussee 5, 12489, Berlin-Adlershof, Tel. 030/69 54 57 20, Fax 030/69 54 57 22.

#### Project Managers' Roles Reviewed

M10410142593 Bonn *TECHNOLOGIE-NACHRICHTEN*  
*MANAGEMENT-INFORMATIONEN* in German  
30 Aug 93 pp 10-12

[Text] The BMFT [Federal Ministry of Research and Technology] avails itself of the services of project managers when awarding grants out of its budget. They advise applicants, recommend applications for approval or otherwise, supervise projects once they have been approved, and are often involved at the policymaking stage.

Project funding (direct, indirect, and indirect-specific) involving project managers is a central research policy instrument. The project managers also support the BMFT in other areas, for instance international programs, workshops, and specialist seminars, and they advise applicants as to the opportunities for funding provided by specialized EC programs. The funds handled by 31 project managers from 14 facilities have grown over the last three years from 2 billion German marks [DM] to DM2.5 billion and have thus, contrary to the view expressed by the opposition, not declined, the Federal Government stated in answer to a minor question from the SPD [Social Democratic Party of Germany].

The figure of the project manager had proved its worth and had consequently been adopted by other federal and land-level ministries as well.

Involving project managers in the approval process has given rise to difficulties. The division of responsibilities between the project managers and the BMFT following the separation of the process leading up to the decision (project managers) from the decision itself (BMFT) can duplicate work and prolong the process. Other federal ministries have also found to their disadvantage in recent years that it is not yet legally possible to delegate the granting of subsidies to bodies outside the federal administration, as there is no legal basis on which project managers can grant subsidies by administrative act.

This shortcoming is now to be made good by an amendment to article 44 of the Federal Budgetary Regulations that will make it possible to invest legal entities under private law with the authority to grant funds under public law. Once this provision has come into force, the BMFT intends to make use of these powers in suitable cases.

The BMFT will, moreover, take all the steps that it deems will increase project managers' efficiency and/or reduce their costs. In particular, it has the following plans:



—To bring together project managers working in related disciplines but in different geographical areas or organizations by grouping related areas under the same project manager. As a result, work processes within the same discipline can be streamlined and operating units of a size better suited to each task can be created, this being particularly important with regard to the planned empowering of individual project managers.

—To set out the duties that the project manager is expected to perform in a standardized job specification (standardization of the duties of a project manager). This will provide a better yardstick for assessing the performance of a project manager and at the same time establish which duties are not incumbent upon the project manager but remain the prerogative of the specialized departments of the BMFT.

—To equip the project managers better for their duties by providing special training courses in technical subjects and budgetary law and by stepping up staff exchanges between the BMFT and the project management bodies.

The further development of the project manager concept, and the implementation of the above measures in particular, will take particular account of the special needs of applicants in the new federal laender (hereinafter NFL); in other words, the measures can only be implemented gradually, and only in such a way that they will not work to the detriment of applicant counseling and the fastest possible processing of the projects proposed.

The BMFT's project managers processed a total of 8,144 preliminary enquiries, 1,371 outline applications, and 7,208 formal applications in 1992. The project managers are currently supported by 24 advisory panels. The project managers' average processing time was 5.3 months per project in 1992.

#### BMFT Project Managers

No.	Managing Facility	Project Manager/Funding Area
1.	Association of Industrial Research Facilities (AIF)	Trainee research personnel funding (concluding stage)
2.		Joint research between industry and science (concluding stage)
3.		Contract research in western Germany (concluding stage)
4.		Contract R&D for the NFL, West-to-east contract research, Trainee research personnel funding for the NFL
5.	German Society for Chemical Apparatus Engineering (DECHEMA)	Corrosion and corrosion protection (until 31 December 1993)
6.	German Electron Synchrotron Foundation (DESY)	High-energy physics

7.		Synchrotron radiation
8.	German Aerospace Research Institute (DLR)	Space research/space engineering (in concluding stage)
9.		Information technology
10.		Work and technology
11.		Health-related research
12.		Environmental engineering
13.		Ecosystem research
14.	Juelich Research Center GmbH (KFA)	Biology, Energy, Ecology, Marine, and Polar research
15.		Research into condensed matter and new technologies in the humanities
16.		HTR <sup>1</sup> development (until 31 December 1992)
17.		Materials and raw material research
18.	German Lloyd	Nautical engineering
19.	Society for Mathematics and Data Processing (GMD)	Technical information
20.	Society for Plant and Reactor Safety (GRS)	Reactor safety
21.	Society for Heavy Ion Research (GSI)	Medium-energy and nuclear physics
22.	GSF <sup>2</sup> Environment and Health Research Center	Health-related research and development
23.		Environment and climate research
24.	Karlsruhe Nuclear Research Center (KfK)	Hydrotechnology and sludge treatment
25.		Production engineering and quality assurance
26.		Disposal
27.	Association of Technical Engineers Technology Center (VDI-TZ)	Physical technologies, laser research, safety research and engineering
28.		Assessment of the impact of technology
29.	VDI/VDE <sup>3</sup> Information Technology Center (VDI/VDE-IT)	Microsystems engineering
30.		Establishment of technology-oriented enterprises/technology centers in the NFL
31.	Federal Environment Agency (UBA)	Waste management and polluted site reclamation

(1) High-temperature or homogeneous thorium reactor

(2) Society for Radiation and Environment Research

(3) Association of German Engineers/Association of German Electrical Engineers

**European Affairs: Eurotech High-Tech Venture Capital Group Expands Membership***BR0110164093 Paris ELECTRONIQUE  
INTERNATIONAL HEBDO in French 9 Sep 93 p 6*

[Article by Didier Girault: "European Venture Capital for Small- and Medium-Sized Electronics Firms"]

[Text] In order to assist small- and medium-sized electronics and computer companies, the EC Commission has launched Eurotech Capital, a network of European venture capital companies with an investment potential of more than 1 billion French francs [Fr]. With the aim of encouraging investment in small- and medium-sized high-technology firms, particularly in the electronics and computer fields, the Commission of the European Communities has launched Eurotech Capital. (Footnote) (The Eurotech Capital investors will take part in the annual MITECH business meeting which will be held on 3 and 4 November at Evry (Essonne). For information contact Jean-Luc Garnier, tel. +33-1/4425 2604. It is also possible to contact the Eurotech Invest Team, Scotland, UK, tel. +44-334/776 6000.)

"Initiated in 1990, it has only recently started to gain momentum, as the network of investors now comprises a majority of venture capitalists, whereas previously, institutional investors and development capitalists were in the majority," explains Pierre Riols, who heads the Eurotech Capital team at Sofinnova. Eurotech Capital is a network of European financial institutions (11 at the moment, 14 by the end of the year) each with more than ECU 50 million (Fr330 million) at their disposal, which have agreed to invest 20 percent in small- and medium-sized European high-technology firms. In all, nearly ECU 150 million (Fr1 billion) will be made available to the companies.

**'Transnational' Small- and Medium-Sized Firms**

In exchange for this commitment, the investors in the network will receive from the EC a small financial subsidy, in the form of a reimbursable advance equal to 4 percent of the 20-percent investment. In addition, the EC offers two services: Eurotech Data, a specialized information service which allows investors to obtain detailed analyses of technical sectors ("high-quality work" in the opinion of Pierre Riols); and Eurotech Invest, which is located in Scotland and which was initially planned as a "welcome desk" for those asking for funds. "To date, Eurotech Invest has not fully met expectations; this is why the members of Eurotech Capital have asked it to 'work' on matters involving EC programs (ESPRIT [European Strategic Program for Research and Development in Information Technology], EUREKA [European Research Coordination Agency], BRITE-EURAM [Basic Research in Industrial Technologies in Europe/European Research on Advanced Materials], etc.)" explains Pierre Riols.

Eurotech Capital's services are intended for companies employing fewer than 500 persons and working on "any product or production process developed within the scope of an EC, international, or national research program; or any product or production process that is based on a new technology or even on an improvement to an existing technology." The company must also be "transnational," i.e., it must either be cooperating or have cooperated, at the R&D or production level, in a EC program; or it must have been the beneficiary of a transfer of a patent originating in an EC country; or 25 percent of its capital must be held by foreign investors.

In practice, a small- or medium-sized company looking for funding can approach one or more members of the Eurotech Capital network. "more often local investors, for obvious cultural reasons," explains Pierre Riols. There is no lower or upper limit on the request for funding, as joint funding arrangements are possible. And the company's request is conveyed to the European Seed Capital Fund Network, which authorizes supplementary subsidies for start-up companies. Moreover, a company approaching a member of Eurotech Capital has access to the EC's two CORDIS (Community Research and Development Information Service) databases, RTD-Results and RTD-Partners, which can be instrumental in concluding licensing contracts, marketing agreements, or joint venture agreements. The fund-seeker can also obtain up to Fr2 million of funding from the EC, allocated in the form of a reimbursable advance at the ECU lending rate, within the framework of the Venture Consort program.

Thus, in practice, a small- or medium-sized firm will have to submit its project to one of the members of Eurotech Capital to obtain start-up funding (concept definition, etc.), to get a project under way (product development and initial marketing), or to obtain initial-phase or expansion-oriented funding.

[Box]

**Eurotech Capital Soon To Have 14 Investors**

Eurotech Capital has 11 investors, and will have 14 by the end of the year. They are:

From Italy: Finanziaria Italiana di Partecipazione and Societa Finanziaria di Partecipazione.

From France: Innovion, Finovelec, Sofinnova; the French-Italian Eurosud Capital.

From Spain: INI (Instituto Nacional de Industria).

From Germany: TVM (Techno Venture Management).

From England: BIL (Biotechnology Investments Ltd).

From Holland: Gilde Investments Funds.

From the Benelux: Euroventures Benelux Team.

By the end of the year they will be joined by two British investors and Denmark's DDFC.

**Thomson Buys Siemens Electronic Tube Activity**

93W.S0008B Paris L'USINE AUCUELLE (in French)  
22 Jul 93 p 34

[Text] Thomson-CSF is taking over Siemens's electronic tubes (coaxial, travelling wave tubes, used in Hermitian and radar beams) business. The division generates turnover of 200 million French francs [Fr] a year and employs 290 people. Its acquisition consolidates the French group's position (Fr 3 billion) in the field. Last February, Thomson-CSF acquired the antenna, electronic tube, and radio transmission system business of Asea Brown Boveri. The Thomson Electronic Tubes division will move all production to Velizy (Yvelines) in early 1994.

**France's Valinox, Canada's Inco Alloys Merge**

93W.S0008B Paris L'USINE AUCUELLE (in French)  
29 Aug 93 p 29

[Text] Valinox Nucleaire—a subsidiary of Valsudrey, which makes tubes for the nuclear industry—is teaming up with Inco Alloys on a joint marketing venture dubbed Valinox. The new firm will distribute the products of both companies everywhere in the world except Europe. The two partners have worked together before, when they produced and delivered vapor generator tubes for the Ulsan-3 power plant in South Korea. Earlier this year, Valsudrey merged its manufacturing and marketing activities for stainless-steel, non-welded tubes with those of the German firm Mannesmann and the Italian company Dalmine.

## Germany: Bonn to Aid Eastern Countries in Research

DER SPIEGEL / Internationale BEIHAFTETER  
VERGLEICH DER POLITIK DER DEUTSCHEN  
IN GERMANY 19.10.83 p.8

[Bonn Strengthens Research in the East European States]

[Tsu] BONN aims in order to facilitate their adaptation to West European standards and procedures. German Federal Minister of Research Paul Kraeger wants to aid the countries of Central and East Europe in establishing an efficient scientific structure through increased cooperation and problem-oriented advice. Sources in the Ministry of Research indicate that newly appropriated funding for such cooperation in this year alone amounts to more than 16 million German marks (DM).

The purpose of this assistance is to help put these countries in a better position to make effective contributions to resolving problems arising as a result of the current economic crisis and of the change in their social systems. Of the total amount, DM2.2 million has been set aside for the "young" scientific and technical cooperation that already operates within the framework of existing agreements. DM2 million have been assigned for the exchange of researchers, DM5 million for projects within the framework of government programs of the German Federal Ministry of Research, and DM4 million for consultant work with German specialists with the aim of improving the structure of research and technology policy.

As a model of the new type of cooperation, efforts in Bonn point to Hungary, where a foundation for applied industry-oriented research, similar to the German Fraunhofer Society, was established last year and where the main for some institutes has been firmly laid. Before this was achieved, however, twelve candidates for managerial positions in the planned institute familiarized themselves with operations in German institutes of the Fraunhofer Society. The official inauguration of the Hungarian counterpart to the Fraunhofer Society is scheduled to take place in Szeged in September in the presence of Minister Kraeger.

Efforts to establish similar, effective research facilities in Romania and Bulgaria are still in the initial stage. German specialists have also undertaken an evaluation of the scientific and industrial potential of Slovenia.

## BMW/Rolls-Royce Head on Strategy, Marketing Prospects

MITTELMANN / Die Weltweit / HANDELSBLATT in German  
1.10.83 p.17

[Article by Wolfgang Schmidt under the rubric "Companies and Markets": BMW/Rolls-Royce GmbH (Joint Venture Company), Conversation with BMW-RR Head Klaus Schroeder—As of 1985 Jet Engines from its Daimler-Benz Plant in Brandenburg. The BMW Subsidiary Could Not Give Less About the Alliance of the Big Engine Makers.]

[Tsu] Munich, Wednesday, 4 Aug 83 [HANDELSBLATT]—BMW supervisor, head of the Board of Directors, Klaus Schroeder does not have to worry for the time being about the success of the BMW/Rolls-Royce GmbH (BMW-RR) engine subsidiary founded 8. Aug. The company, which arose in 1980 from the partnership with small engine builder KHD Tullmanns (Hamburg) and GmH in Chemnitz and since then has engaged technicians for a small new aircraft engine for commercial and local service aircraft, is completely on schedule and is full of optimism for the future. The new proposed design built in Chemnitz for a small "propeller" of 2000 cc engine, will go through its first test run in August in Rolls-Royce in Derby.

The first important milestone in the development of the engine (type called the RR 700) in the thrust range of between 1100 and 1700 pounds, has accordingly been reached for the German-English company. BMW-RR head Klaus Schroeder is certain that his company, which presently does around 200 million German marks (DM) in sales, will surpass the DM1 billion mark and will point a path toward the end of the decade with the new engine.

## Optimistic Market Assessment

"We are fighting on long in the market in development operations first in 1984 and we will have started the development work in around DM1 billion for the first sales later," Schroeder declares in a conversation with HANDELSBLATT. The completed engines are to be shipped from the new Daimler-Benz plant in Brandenburg as of 1985. First the only firm, in the American commercial aircraft manufacturer's Daimler-Benz (DZ) firm orders and later at Canadian manufacturer's for an additional 200 engines.

Schroeder is taking markedly calm the necessary competition from the alliance announced in June between the two major competitors in the world engine markets: the USA's General Electric and Pratt & Whitney groups and French Snecma and the Deutsche (German) company continues to MTI (also Heinkel-Bell group). The market for engines for commercial and local service aircraft is large enough for several suppliers. However, the former BMW manager, who has been heading the new subsidiary of the German automotive maker (VAG parent) and the BMW engine manufacturer, Rolls-Royce (P&W parent) since its founding.

The engine will not be developed as a private project, rather planning for the long term. The program is being now. Up to now, BMW-RR had liquidated its own competitors (mainly to MTI together with Pratt & Whitney) was developing the so-called R11, 180 and Snecma together with German firm, was pursuing a project called the TEM 18. With the entry of the market in the industry estimated at around 1000 cc engines, it shows a clear trend that would lead to BMW-RR in the 15 years after the market introduction of the RR 700 family in 1985. However, if the market actually comes off and the present position is confirmed (first of a small engine) the planning would be done later. Without customers would have a



choice between just two instead of three options, BMW-RR's share could become markedly larger, Schneider believes, self-assuredly.

However, the concentrated market power of the four manufacturers that today cover together in various consortia at least 80 percent of the total Western market for engines is behind the rival project, while the single BMW-RR parent Rolls Royce has only around 16 percent. But if one considers just the market for civilian engines for local service and commercial aircraft, then the British with their widely prevalent "Tay" have around 75 percent, while the others thus far are not at all represented here (25 percent is supplied by small manufacturers like the USA's Allison company, among others).

#### **A Good Start Is Already Ensured**

Almost all local service and business jets, including those of Dutch Fokker N.V. [Inc.], which as a subsidiary of Deutsche Aerospace AG [German Stock Company] (DASA) now also belongs to the Daimler-Benz group, have standardized on Rolls-Royce technology. Schneider feigns certainty: "Because we are building on this Rolls-Royce position and technology with the successor to the Tay, the BR 700, we have excellent starting conditions."

With sales of around 1,000 specimens already, which Schneider expects at least from the business relationship with Gulfstream and Canadair, he sees economic success ensured. With that he also has new hopes for the government support that thus far has been withheld in Bonn because of the MTU rival project: "We have fulfilled the essential prerequisites for support and have a tight grip on our application."

#### **Cooperation With MTU Not Ruled Out**

The new alliance of General Electric, Pratt & Whitney, Snecma and MTU could be in the marketplace in 1997 according to MTU's statement, if the so-called launch decision were to come today. But this decision is expected not before the four partners have reached an agreement on the division of labor in the new project—a difficult process between companies that thus far have been working together in two competing groups.

The consortium, which after delays of many weeks will one of these days sign just a memorandum of understanding, also does not yet have orders, though the partners in Gulfstream and Canadair have bid together. The next request for bids for the new generation of small engines, in which both competitors in the new constellation will face one another for the first time, is expected in the industry next year at the earliest. The joint venture formed by British Aerospace and the Taiwan aircraft industry for building a 100-seat airplane named the Avro is a potential customer.

In spite of the four-way alliance of BMW-RR's competitors, in which the formation of MTU had a decisive part, Schneider apparently is not yet totally giving up hope of cooperating after all with Daimler's DASA subsidiary. Intensive negotiations concerning this were under way up to just a half a year ago. Schneider: "We both had really

very specific common notions concerning the division of labor. However, we wanted to retain system leadership. After all, BMW-Rolls-Royce is providing the greatest input of know-how." DASA head Jürgen Schrempp thereupon broke off contact, because he did not want to sacrifice co-leadership in a joint project. All the same, for the BMW-RR head it goes: "Doors must not be slammed shut forever." Experience thus far in the industry has shown him this, he says. He says he is still open to a partner for the more powerful version of the BR 700 family for local service jets. And both parent companies have granted him a free hand in choosing the partner.

#### **German Robot Manufacturers Seek New Strategies**

93WS0668A Paris L'USINE NOUVELLE in French  
22 Jul 93 p 27

[Article by Stephane Farhi: "Simpler, More Reliable, and Cheaper German Robots"; first paragraph is L'USINE NOUVELLE introduction]

[Text] German manufacturers have sharply reduced both their costs and the time it takes to develop robots. They are offering smaller, more specialized tools, to broaden their customer base.

How do you make something less complicated, cheaper, and more reliable? The equation being tackled by German makers of industrial robots is not surprising. One after another, Kuka, Reis, and Cloos—to name only the major players—are switching to "just-what-is-necessary production." Germany, which is Europe's top producer and user of robots, has felt the first shots in the upcoming war. For one thing, production in the robot industry dropped more than 20 percent (in number of units) in 1992, while Germany's domestic market shrank 11 percent, according to the German machinery federation, VDMA.

For another, the Japanese threat to the Old World has materialized. And although Fanuc, Yasakawa, and Panasonic are suffering from Europe's recession like everyone else (even more so), they have managed to impose their pricing—which is downward! Together, the two constraints are forcing German manufacturers to overhaul the way they use their capacities.

The drop in industrial investment has played a part. Although Germany's stock of robots is pushing 40,000 (39,000 in late 1992), the number of robots installed fell from 5,900 in 1991 to 5,200 in 1992. Production fell from 6,290 in 1991 to just under 4,900 last year. And the market in 1993 is expected to be stagnant. The immediate upshot is that Reis, whose sales peaked at 100 million German marks [GM] (340 million French francs [Fr]) in 1991, suffered a 17-percent drop in turnover in 1992. That same year, Cloos's sales were down 12 percent (GM120 million, 40 percent from robots). And the turnover of Kuka, Germany's top manufacturer, fell 13 percent from GM645 million in 1991 to 562 million (Fr1.9 billion) in 1992. But the Augsburg firm is determinedly optimistic this year: Its orders hit the GM557 million mark in 1992, compared to GM471 in 1991. Reis, which employs 500 people in

Germany, made staff cuts of 10 percent, while Kuka's robot division trimmed 100 from its staff of 500.

However, the drop in investment is only one factor in the changes underway. "Prices have plunged 50 percent in four years. And price is an increasingly important factor in customer choice," acknowledges Stefan Muller, director of robotics at Kuka. "Before, we concentrated on sophisticated installations. Now we are moving toward simplified ones, looking for the best possible price," explains Frederic Cesure, general director of Sana, Cloos's distributor in France.

As a result, Reis brought out a 6-kilo-load robot for arc-welding at the beginning of the year, priced at under Fr300,000. Kuka is planning to do the same in the second half of the year, in followup to the 10-kilo, IR 364 machine it launched in 1992. "You expect the reliability; what will surprise you is the cost," Kuka ads for its latest arc-welding robots even boast.

#### Boosting Exports

German manufacturers had to work double-time to "pull off" these "Japanese" prices. Simultaneous engineering and "project teams" enabled them to cut development costs while achieving the desired simplicity. The RV6 was developed in nine months instead of the usual 18, and the IR 364 in 12 months instead of the 26 spent on the previous, admittedly bigger, model. The techniques chosen by the different manufacturers—halving the number of components, using facilitated programming or mechanically-welded instead of cast structural parts—all tend toward the same end.

Strategies, however, differ. Each company is striving to broaden its customer base while maintaining investment in research and development (8 to 10 percent of sales). The "little guys" Cloos and Reis, which produce 200 to 350 robots a year, are counting on their specialties—arc welding for the first, and welding and parts handling for the second. They are also seeking to boost their exports, which account for 25 to 30 percent of their sales. In two years, Cloos has sold five automobile robot installations, at DM500,000 apiece, in China.

But Kuka is the most aggressive. The Augsburg firm's "small" robots (30, 10, and 6 kilos) are a clear bid to amortize its development costs by boosting production. It considers 1,000 robots a year a minimum. Kuka is aiming for a 50/50 balance between big and small (30 kilos and under) robots by 1995.

At the same time, as a major specialist in auto production lines, Kuka is trying to penetrate Volkswagen, Renault, and Fiat. All three make robots in their in-house division (Volkswagen) or subsidiaries (Renault Automation and Comau). Two years of patient negotiations have paid off at Volkswagen, whose Audi subsidiary has just ordered 200 robots. In France, Kuka has become the second-biggest supplier of PSA after Renault Automation, and hopes to get in the door at Renault. With that in mind, Augsburg is not ruling out a collaborative deal with Renault Automation. To be continued...

#### European Aviation Industry Hopes for Greater EC Support

93WS0678A Duesseldorf VDI NACHRICHTEN  
in German 6 Aug 93 p 2

[EC Commissioner Matutes: Joint Ventures for the Airlines Loom]

[Text]A fierce autumn is threatening the European airline industry. Aircraft manufacturers as well as national carriers are looking for ways to meet the growing pressure from American competition.

"The European airline industry has lost a lot of ground," according to Geoff Shuman, Speaker of the European Aerospace Industry Council (EAIC), which was founded in March of this year in Hamburg. "In comparison with the USA, we live with enormous disadvantages." The representatives of all the large European aircraft manufacturers are included in EAIC. Their goal is to make clear the strategic importance of aircraft production for European industry. At the same time, the EAIC points to the strong federal support for American aircraft manufacturers, and it therefore demands additional funds from the EC's fourth framework for research.

While the European aircraft manufacturers are pulling back, the European airlines are still entangled in a ruinous competition. EC Commissioner Abel Matutes, in charge of the Commission's transportation policy, therefore established an independent team last month under the direction of Herman de Croo, the former Belgian Transportation Minister, to investigate the difficulties facing the airlines and, by the end of the year, to propose a number of solutions to the problems.

Matutes and Croo both proceed from the assumption that a number of European airlines will not survive: "There will have to be a certain number of mergers," Matutes says. According to the AEA (Association of European Airlines) in Brussels, in the last three years the large European companies experienced a loss of over three billion dollars, which was more than they had earned in the previous five years.

The pressure for consolidation in Europe is brought on above all by the ruinous price war on the North Atlantic routes. While European airlines like Lufthansa make up to 25% of their business on these routes, they are only good for about 5% for the large U.S. airlines like American, Delta and United. This makes the price war tolerable for the American carriers. It also makes sense for them. Since while they can fly on to other European countries from German airports, most European airlines are not allowed to continue on in the U.S. According to Lufthansa spokesman Peter Hoebel, "we want the economic playing fields to be comparable." Clearly stated: the European airlines want to be able to continue to fly on within the U.S. just as American carriers can do within Europe.

For this reason, the Belgian Minister of Transportation Guy Coeme, whose country has the rotating EC chairmanship until the end of the year, wants to bring the European ministers of transportation and the representatives of the

airlines together at the conference table in September. "Our goal must be to improve the competitiveness of the EC airlines by means of agreements on reciprocal market access, tariffs and traffic rights." He dismisses mergers: "It cannot be in the best interests of the customer to have only four airlines left in the EC."

The European airlines are still going their separate ways. France has announced its air transport agreement with the U.S.; Federal Minister of Transportation Mathias Wissmann wants to do the same if the U.S. at least freezes its current dominance in transatlantic service. A good 60% of transatlantic air service from and to Germany, according to the AEA, is currently being handled by American carriers.

At the same time, the European airlines are looking for partners in the U.S. in order to gain access to the U.S. market: Air France is cooperating with Continental, KLM with Wing Holdings, Lufthansa with United.

"Still, to really gain a foothold," a representative of the AEA in Brussels says, "the Americans must allow the Europeans to acquire American companies." The U.S. still refuses to permit this.

#### **German University Study Reports Machining Companies Slow to Change**

93WS0678B Duesseldorf VDI NACHRICHTEN  
in German 6 Aug 93 p 6

[Small Operations Falling Behind in Innovation]

[TEXT]The willingness to cooperate has not been particularly pronounced among German machining companies; vertical integration has not yet been able to be significantly reduced overall. According to a study by the Ruhr University in Bochum, machining companies are slow to change their production strategy.

Together we are stronger—this truism has once again been confirmed through a study by the Ruhr University in Bochum on structural changes in machining companies. But the old wisdom does not seem to have spread everywhere in the industry. Companies working in cooperation with other producers were more likely to be able to increase their turnover than companies operating alone without partnership.

Dr. Ulrich Widmaier and other colleagues from the special field of research 187 [as written] of the Ruhr University in Bochum interviewed more than 1,000 businesses in West Germany on "Technique and Organization of Work in Production." One finding by the researchers, who published the study jointly with the Society for Consumer Research (GfK) in Nuernberg, was that only one third of machining companies regularly worked in cooperation with other companies.

The researchers found that cooperation most often occurred in marketing and sales—nearly two thirds of cooperative efforts were related to these areas. Cooperation was less frequent in research and development (41%) or in purchasing (36%). In this context, the authors of the study warn expressly against first looking for cooperating

partners when a company's very existence is in danger: potential partners could be more likely to be frightened off by an acute crisis.

Success is ensured not only through cooperation but also through innovations in production. Introducing new products, however, has long not been taken for granted for every company. In fact, 78% of all companies questioned indicated that in the last three years they had put products on the market which were new to their product line. However, at the same time that means that more than one fifth of the companies are still continuing to work today with the same products they had in 1990.

It is striking that small companies (up to 100 workers) implement product innovations to a lesser extent than do larger operations. While approximately every other large machining company began using new materials (made, for instance, out of ceramic or plastic) within the past three years, only about every third small company could compete with such innovation.

An interest in innovation is thoroughly rewarded: in spite of the continuing cyclical economic crisis, companies which have introduced new products or processes in the last three years were able to increase their turnover by 53%, while almost two thirds of the companies without corresponding innovations had to cope with stagnation or even a decline in sales.

The result is that things are getting tight for the small companies. The researchers conjecture that just such companies might not be able to manage the high expenditures and developments. "But since the economic condition of the company may be more likely to deteriorate in the long run without product innovations, it is necessary to get outside help in this area," the authors of the study urge.

It is just the smaller businesses which are hard pressed to reduce their vertical integration. The large companies have a clear advantage: between 1991 and 1992, more than one third of the large concerns reduced their share of in-house production—either by intensifying their relationships with suppliers or by giving up areas of production or making them independent.

In total, between 1991 (66.1%) and 1992 (67.6%), the share of in-house production in West German machining companies scarcely changed. However, during the period of the study, 27% of the companies reduced their vertical integration, while 30% increased it and 43% of those questioned experienced no change. "Apparently the machining companies are still experimenting with the tool of lean production—a rash switch to the suppliers does not always bring about benefits as hoped," the Institute of German Economics concludes from these numbers.

The Bochum study was able, however, to discern a significant tendency toward teamwork. For 1992, 47% of the companies interviewed said that they had brought teamwork into the production process, as opposed to 30% in 1991.

Some skepticism, however, remains. Dr. Ulrich Widmaier and his colleagues are of this opinion: "By and large, in the

small to medium sized machining companies innovative operations in the way work is structured have been introduced, but in view of the demonstrated advantages of new methods of production, this process is moving very slowly."

The situation for German machining companies is very serious, the mood is pessimistic. Of the 1,200 companies interviewed, only 60% believed in 1992 that they would be able to continue to increase their sales—in the previous year 60% had believed in growth. The companies are focusing on a long dry spell: only one out of ten of the companies interviewed still believed it would be able to hire more personnel in the next three years. In 1991, three out of ten companies still assumed an increase in personnel.

The experience of the Bochum researchers agrees with other numbers: Jan Kleinewefers, President of the Association of German Machine and Installation-Building Enterprises (VDMA), reckons with a further decrease of at least 6% in production in West German machine building for 1992. The West German Regional Bank (WestLB) estimates that in the current year alone 80,000 jobs will be lost in West Germany.

#### **EC: Machine-Tool Industry Efforts to Regain Competitiveness**

##### **Industry Policy Proposals to EC**

93WS0693A Paris *PRODUCTIQUE/AFFAIRS*  
in French 1 Sep 93 p 1

[Article entitled: "Europe's Machine-Tool Industry Floats Rescue Scenarios"]

[Text] Machine-tool manufacturers have submitted their list of grievances to the European Commission. Indeed, Europe's machine-tool association Cecimo has compiled a document listing the manufacturers' main proposals for instituting a community-wide industrial policy. The situation is so dire in France, Germany, Switzerland, and Italy alike that the manufacturers' very survival is at stake. In France, business fell 18.7 percent in 1992, after a 15-percent plunge in 1991. Some manufacturers openly admit that sales in 1993 will be only half—or less—of what they were in 1990-91. Things are no better in Germany, where the brutality of the recession has forced competing firms (Deckel and Maho) to merge. Moreover, the Cecimo document points out that the small size of machine-tool makers is a weakness in today's economy. The average number of employees in Japan is 125, though the number is only 96 in the United States. In addition, the hourly costs borne by European machine-tool manufacturers are nearly double those of their competitors. In Germany, they come to 40.48 marks, compared to 29.63 in Japan and 25.57 in the United States. Cecimo is therefore asking the Commission—not to intervene at the government level—but to "create conditions that will enable each company to achieve its objectives. The ultimate end would be to keep Europe's machine-tool industry competitive on the international market." To accomplish that, the association is suggesting that the problem be analyzed on a European

rather than a national level. Besides a drop in rates and various tax measures (notably affecting investment and amortization), Cecimo is asking for greater flexibility on social benefits. Finally, the association makes a plea for ESPRIT and BRITE European research programs more specifically focused on machine tools. Some observers, who describe the document as creating "much ado about nothing," say it has produced little action given the Commission's reluctance to define an industrial policy. Nonetheless, the discussions that took place within Cecimo have made manufacturers—especially German ones—aware of the need to strengthen their ties to survive the recession. Italy's federation, for instance, has decided to organize an industry-wide congress next October to discuss the future of machine tools.

##### **Alliances**

93WS0693B Paris *PRODUCTIQUE/AFFAIRS*  
in French 1 Sep 93 p 1, 2

[Article entitled: "Cazeneuve and Somab's Shotgun Marriage"]

[Text] Cazeneuve and Somab specialize in the manufacture of conventional and/or numerical-control lathes. In September, 1991, the two decided to call a truce on years of commercial warfare, and team up in the hope of riding out the depression in the machine-tools industry. Six months ago Ernault, which makes lathe and machining centers, joined them after being dropped by the Japanese firm Toyota, which withdrew to its home country. All have the same objective: To survive through mutual support. For the standard machine-tools market is under siege, and basically collapsed (-50 percent) 18 months ago. In 1990, the three firms reportedly racked up combined sales of 700 million French francs [Fr]; now they estimate they would need to make Fr500 million using production facilities scaled down for 500 workers. But, admits Claude Thollon, president of Cazeneuve and head of the new joint venture, they will not come anywhere near doing so this year. Last November the Thollon family bought Ernault (after the Japanese firm expunged Fr700 million in liabilities) to avoid inflating the debt of the Cazeneuve group, which bought first 50, then 72 percent of Somab. "The acquisitions came too early, before Cazeneuve and Somab were able to finish rationalizing their production facilities and product lines," says Claude Thollon. But did Cazeneuve-Somab have any choice? The machine bases of Somab, a company that came out of the painful breakup of Ernault Somua in 1985, were still wholly manufactured by Ernault. And the two firms shared the same distribution network. Consequently, the merger, though hasty, did seem inevitable. Today the three company heads know they must work double time to restructure their operations. The manufacturers plan to cut back their lines, with each concentrating on its greatest strength: the bottom of the line for Somab, the top for Ernault, and the mid-range for Cazeneuve. Plants will gradually become more specialized to avoid erratic workloads and their effects on personnel. The partners aim to gain 10 to 15 percent on manufacturing runs and to offer a joint catalog for the three brand names. In addition to special machine tools,



which are suffering less from the slump, the catalog would offer 10 different standard machine tools, instead of the 20 now produced by the group's various factories.

**Netherlands: Philips President on Restructuring European Economy**

BR0110150393 Amsterdam DE VOLKSKRANT  
in Dutch 30 Sep 93 p 2

[Unattributed article: "Europe Is Living Way Above Its Means"]

[Text] Amsterdam—"If the basic conditions in Europe do not change, then it is inevitable that parts of Philips will leave the country," warned Philips President Jan Timmer on Wednesday [29 September] in a message to Netherlands and other European governments. In Timmer's view Europe needs a "constructive industrial scenario." Europe is at present "living way above its means," he said.

Timmer was speaking on Wednesday at a lunchtime meeting of the Netherlands Association of Chief Newspaper Editors. He used the occasion to take stock of the situation in both Europe and Philips. The European Community seemed to emerge far worse than his own company. The medicines which he prescribed for Europe were very similar to the methods that he has applied at Philips in his Operation Centurion.

Lowering costs is the main task facing Europe, according to Timmer. It is a message which Philips staff have already been given. If Europe wants to remain competitive, then "total labor costs" must be reduced and "excesses in social provisions" tackled. Taxation is too high and the government apparatus is too expensive.

Tackling these problems is part of a change in mentality which Timmer prescribes for Europe, once again in imitation of his own company. Now "we are mainly watching as things go by," Timmer said of his fellow Europeans. That is why this part of the world is lagging behind the United States and Southeast Asia. Protectionism is not the answer. "I am not calling for that. In the past we have said: It is all the fault of the Japanese. We have not been doing that since 1990" (the year when Timmer became Philips president, ed.).

However, Timmer is calling for effective industrial policies. He called this theme "the most important subject in Europe at present," in the light of the big increases in unemployment. He criticized Netherlands industrial policies as "not active enough." In his eyes, the courage to choose for certain branches of industry is lacking in the Netherlands.

In Timmer's view France is a fine example of how things should be done. "The French have been exceptionally pragmatic in tackling the challenge of international competition. Just look at the priority that they gave to Airbus, which is doing better all the time. Is it bad to have a European aerospace industry? I do not think so."

Timmer criticized European subsidy policies, which he likened to a sprinkler system. "You can spread a few drops everywhere, from Algarve [Portugal] to Aarhus [Denmark], and that is a very fair and just system, but it does not get much off the ground. You do not build up a strong position that way."

In saying this, the Philips president seemed to be calling for European subsidies for his sector, an impression strengthened when he described the electronics industry as "a real component of European industry." However, it turned out that he was not looking for an electronics fund. "It is not just money which is needed. It is a question of a really different way of thinking. Europe must get a new concept of competition."

Timmer is not unhappy about developments at Philips, three years after the start of Operation Centurion. For the first time he gave some insight into the sessions which are intended to change the Philips mentality. They take place in the De Ruwenberg conference center. "In the corridors at the firm it is sometimes referred to as 'Grueling Mountain,' because of the Spartan conditions in which the meetings take place. It all contributes to another corporate culture."

Three years ago one of the first exercises for the Philips managers at De Ruwenberg was imagining that the company had gone bust. "It took a few hours before everybody could imagine that. In a big firm like ours there is a tendency to think: Who can hurt us? In the meantime we have learnt that there are a whole number of people who can hurt us."

The changes, which have redundancies as a central feature, aroused considerable opposition. "Managers want to build things up rather than break them down. And it is especially hard for them to have to break down what they have built up in the past." A common reaction was to say that the work simply could not be done with less people. "They felt that their professional honor had been insulted. The attitude was: We are good managers," he said. The fact that such opposition could nevertheless be overcome was thanks to the crisis. It was crucially important in carrying through changes, according to Timmer. "And we were fine as far as that was concerned," he said ironically. "We did not have to complain about the crisis."

The interim balance after three years of Centurion has positive features, Timmer felt. Considerably lower costs, more efficient use of working capital, and the sale of buildings had "considerably improved" the company's balance sheet. Consumer electronic markets are certainly not helping things (loss in 1992: 800 million guilders), but Timmer managed to see a silver lining even here. "That suppresses the misplaced feeling that we have already succeeded," he said. Next weekend he has another session at De Ruwenberg. Timmer has chosen fighting complacency as his priority. In his eyes Europe is not yet sufficiently conscious of that problem.

**Nuclear Energy Consortium To Aid East***93WS0662B Paris AFP SCIENCES in French  
5 Aug 93 p 12*

[Article: "Creation of European Consortium To Improve Fuel Cycle in Eastern Europe and Ex-USSR"]

[Text] Paris—Western Europe's five big nuclear fuel cycle companies have formed a European Fuel Cycle Consortium (EFCC) to aid in the improving and warehousing of nuclear fuel and of irradiated fuels in Eastern Europe and in the former USSR, according to a joint press release.

The release states that on 29 July, in Brussels, COGEMA [General Nuclear Materials Company (France)], BNFL [British Nuclear Fuel Ltd.], Belgionucleaire (Belgium), GNS (Germany), and ENUSA (Spain) agreed to "create a European economic interest group" whose objective will be "to bring together the individual experiences and know-how of the partners in the field of nuclear safety, so as to put them at the service of the European Community under programs designed to aid the countries of Central and Eastern Europe and the CIS [Commonwealth of Independent States]."

The operations of the EFCC "will be concerned with all the nuclear fuel cycle installations and with the handling of spent fuels. The creation of this consortium, initiated by COGEMA and BNFL, is part of a three-year memorandum of agreement, renewable upon expiry."

Its missions will be carried out by EFCC specialists for the account of the EEC, and will have as their object, first of all, to compile a complete inventory of all facilities. They will then define operating problems, and then the priorities and the methods to be used.

Poland, Hungary, the Czech Republic, Slovakia, Bulgaria, Romania, Russia, Ukraine, Kazakhstan, Kirghizstan, Uzbekistan, and Tajikistan are the countries to which the EFCC is expected to provide aid.

The creation of the EFCC "responds to an evident need," says COGEMA's spokesman. "It is designed to improve the effectiveness of the aid provided by the EEC in the field of safety." For this reason, the head office of the consortium will be installed in Brussels.

**French Agency To Promote Electronics Exchanges With CIS***BR0410122493 Paris ELECTRONIQUE  
INTERNATIONAL HEBDO in French 2 Sep 93 p 11*

[Article by Didier Girault: "CIS: The New Electronics Eldorado"?)

[Text] Francis Carassic, former director of Mentor Graphics France, has set up Vostorg, an organization which represents the biggest electronics manufacturer of

the CIS countries. He is investing all his energy in helping French and CIS electronics companies to get to know each other better.

"Working closely with the Paris Chamber of Commerce, Vostorg is in the process of organizing a microelectronics trade fair in Paris next October. It is hoped that the fair will enable French engineers to exchange ideas with their Russian counterparts," explains Francis Carassic, founder and president of Vostorg, a company whose role is to improve communications between France and the CIS countries. This event should complement a seminar on Belarus that the Paris Chamber of Commerce is also organizing in October. With a population of 25 million, the Belarussian region has inherited vast industrial complexes that formerly supplied the ex-Soviet Union with televisions and other electrical household appliances. Too large for the smaller-size potential Belarussian market, these production units are now targeting the export market. India, for example, buys Belarussian televisions produced by Integral, a specialist in electronics and microelectronics (Integral manufacture Horizon and Thomson televisions). Integral, which is represented in France by Vostorg, employs 30,000 to 40,000 people.

**How To Do Business With the Ex-Soviet Union?**

In the field of semiconductors alone, a sector in which Integral accounted for 25 percent of the total Soviet Union production, the CIS countries have five to six manufacturing sites at their disposal. But these are threatened by degradation following the breakdown of Communism in Eastern Europe. Even if COCOM is permitting the transfer of leading-edge technologies today, (such as SUN's SPARC [scalable processor architecture] technology), the production sites themselves are no longer benefiting from the huge budgets formerly supplied by the military.

According to Francis Carassic, the best way for a French company to successfully penetrate the former Soviet market is, first, to attend CIS trade fairs in their field of interest. There is, however, one problem: Despite the advantageous rates offered to Russian companies, they are not all able to take part. Another method is to contact the official organizations and read the newspapers: "The bilingual Anglo-Russian journal THE TRADESMAN is very well documented," according to Vostorg's president. The language does not pose too much of a problem: English is spoken and there is no shortage of local interpreters.

However one looks at it, visiting Russia at the moment, is rewarding because of "the Russians' open-door policy." However, adds Francis Carassic, it is necessary to have "clear ideas on what one can offer and on what one wishes to obtain." The Russian engineers are well informed regarding the latest available technology, but it is still difficult to know all that is hidden within the ex-Soviet Union.

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